Energy Users and Combined Heat & Power: Market Research Findings

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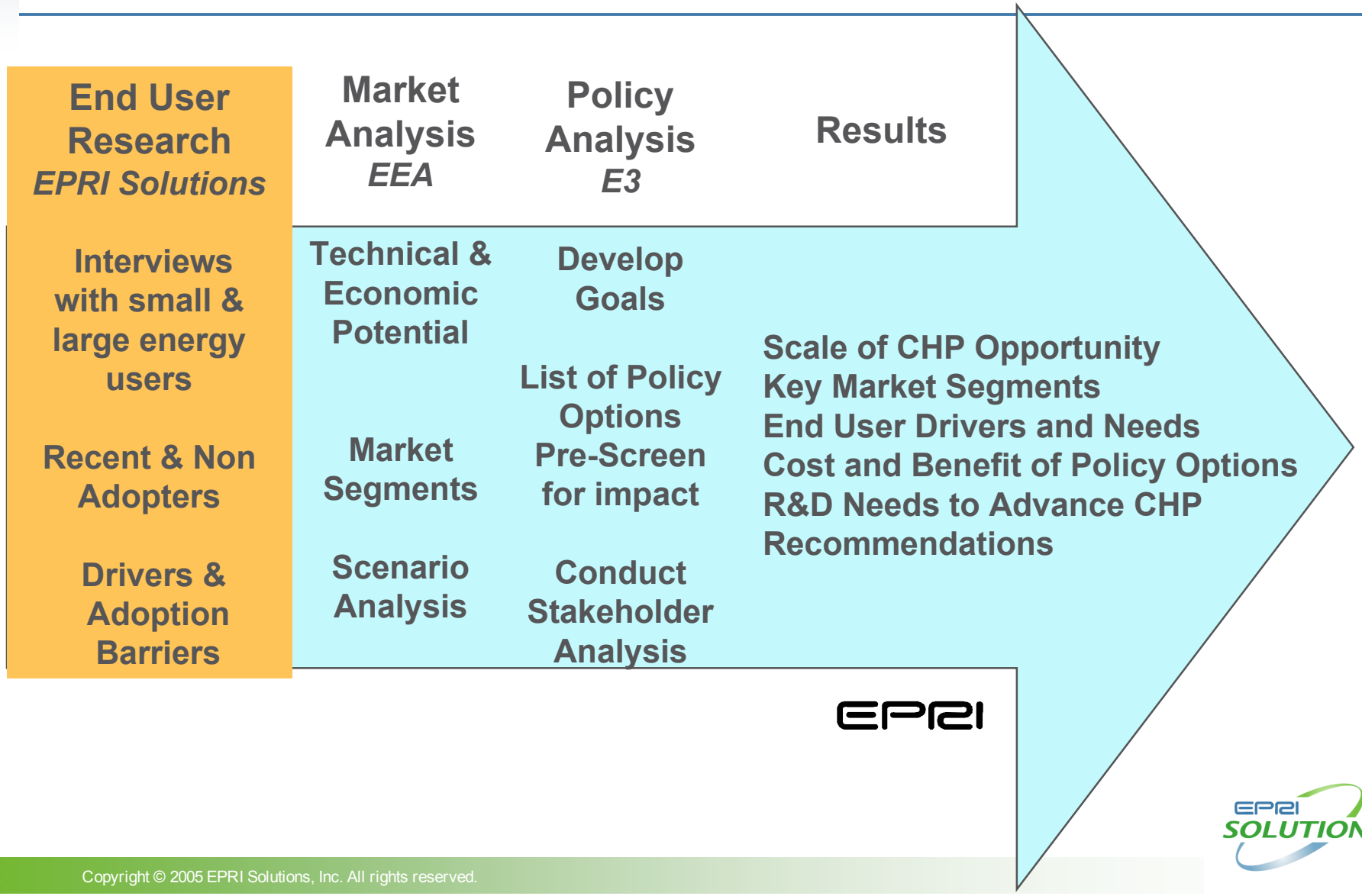
Project research approach



EPRI SOLUTIONS

End user research approach & results

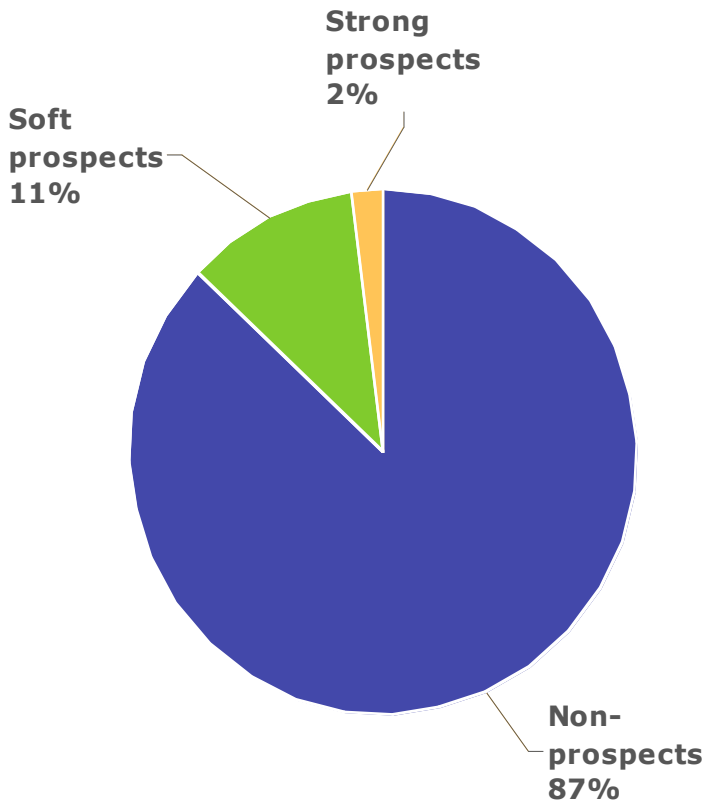
Market research approach

- Quantitative national survey datasets
  - Based on 100s of survey responses
- Qualitative interviews with California users
  - 20 users plus 3 project developers

Top-line results

- Small percent of users are real candidates for CHP
- Economics and reliability issues are main drivers for CHP, but non-economic barriers to adoption exist
- Users desire policies that help overall economics, as that's the main limiting factor to adding CHP capabilities

National market interest – soft prospects and strong prospects

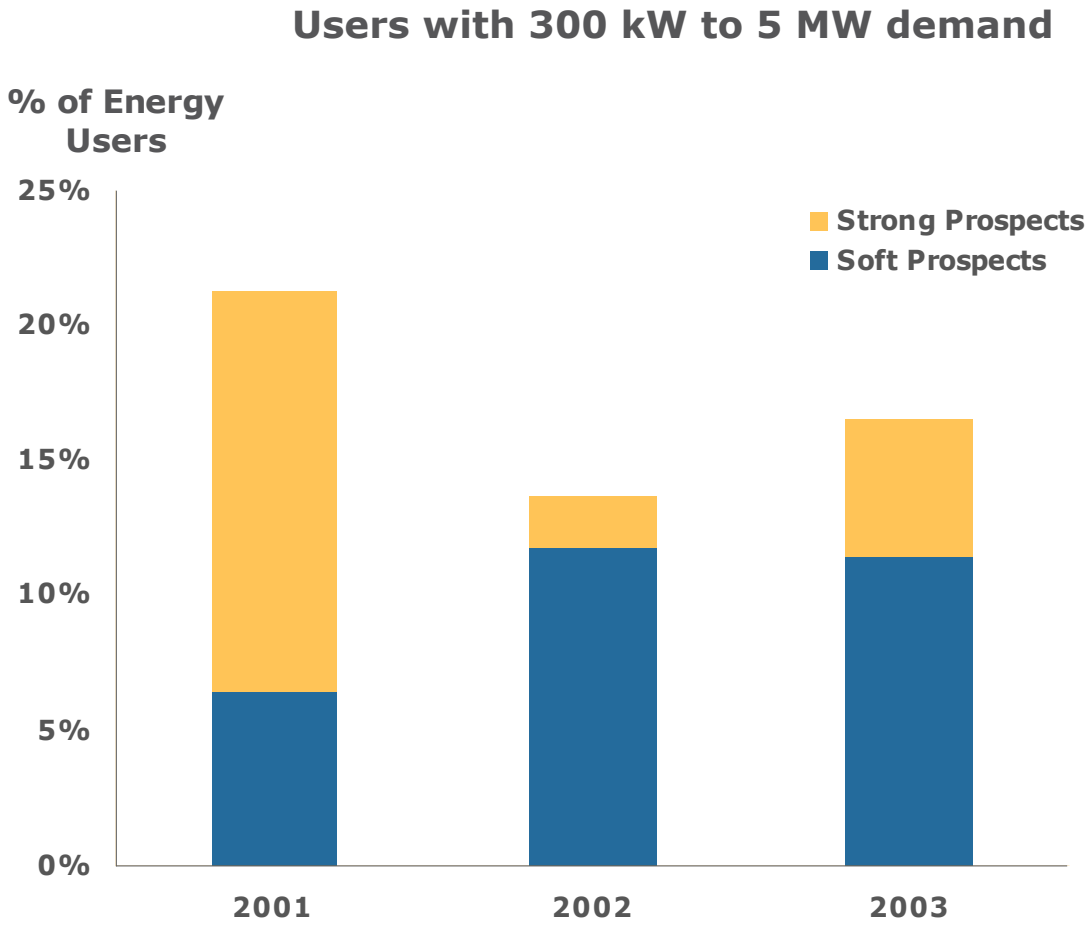


Source: *Primen's 2003 Distributed Energy Market Survey*

More than 12,000 business establishments, in the 100 kW to 10 MW demand range, were strong prospects for DE in 2003 – while more than 65,000 were soft prospects

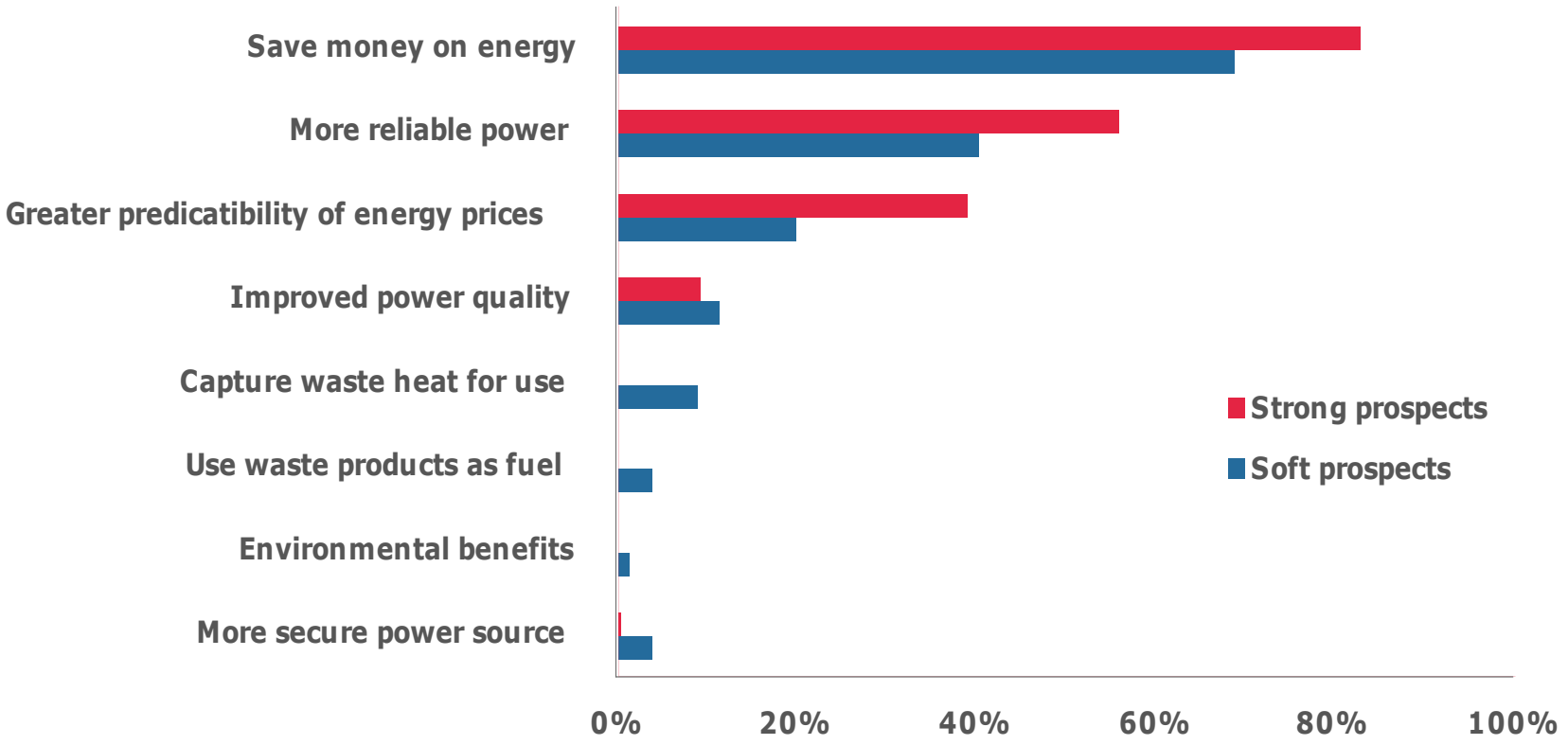
- **Strong prospects** say they are more than 50% likely to acquire baseload DE in the next two years and they are actively evaluating their options
- **Soft prospects** also say they are more than 50% likely to acquire, but they have not begun to actively investigate their options

Nationwide, interest in baseload DE has varied over time



Source: *Primen's Distributed Energy Market Surveys*

Drivers for DE: Bottom line and reliability



Source: *Primen's 2003 Distributed Energy Market Survey*

Energy cost savings

"The cost of energy obviously was the biggest driver."

– printing company,
a 4.2 MW non-adopter in Northern CA

"… the more cogen that we install the less electricity we are going to consume and our utility bill is going to go down."

– community college district,
a 1 MW non-adopter in Southern CA

Improved power reliability

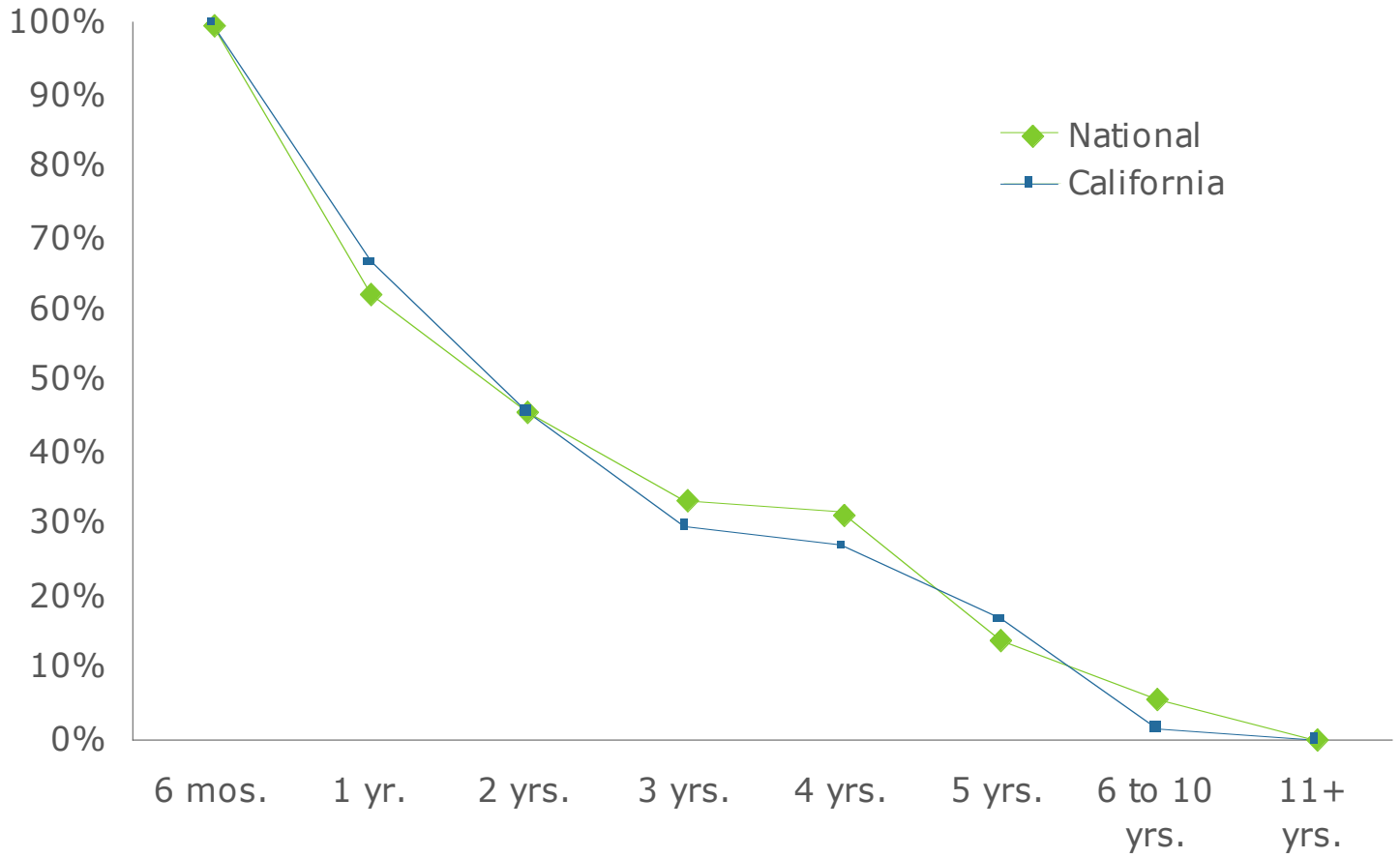
"Everybody collaborating at that time was looking at reliability issues and how to get away from the power outages and blackouts. In the back of everybody's mind was 'Why can't we generate our own power?'"

– computer software company, a 20 MW non-adopter in Northern CA

"The reliability – being a little bit independent of the utility – so that if CA went through another power crisis, we would be in a position where we could support ourselves."

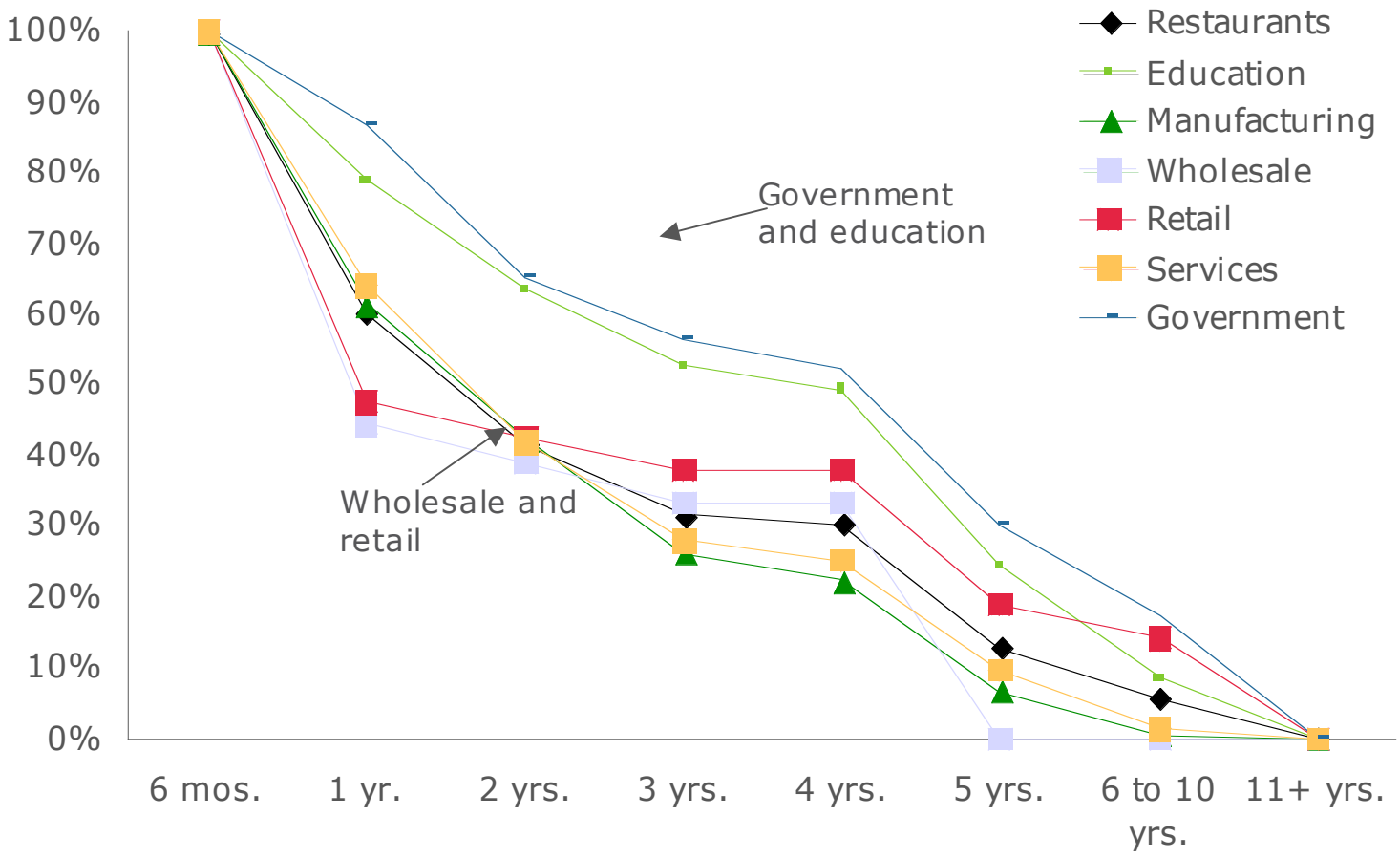
– printing company, a 4.2 MW non-adopter in Northern CA

Percent of establishments that would find various paybacks acceptable for DE



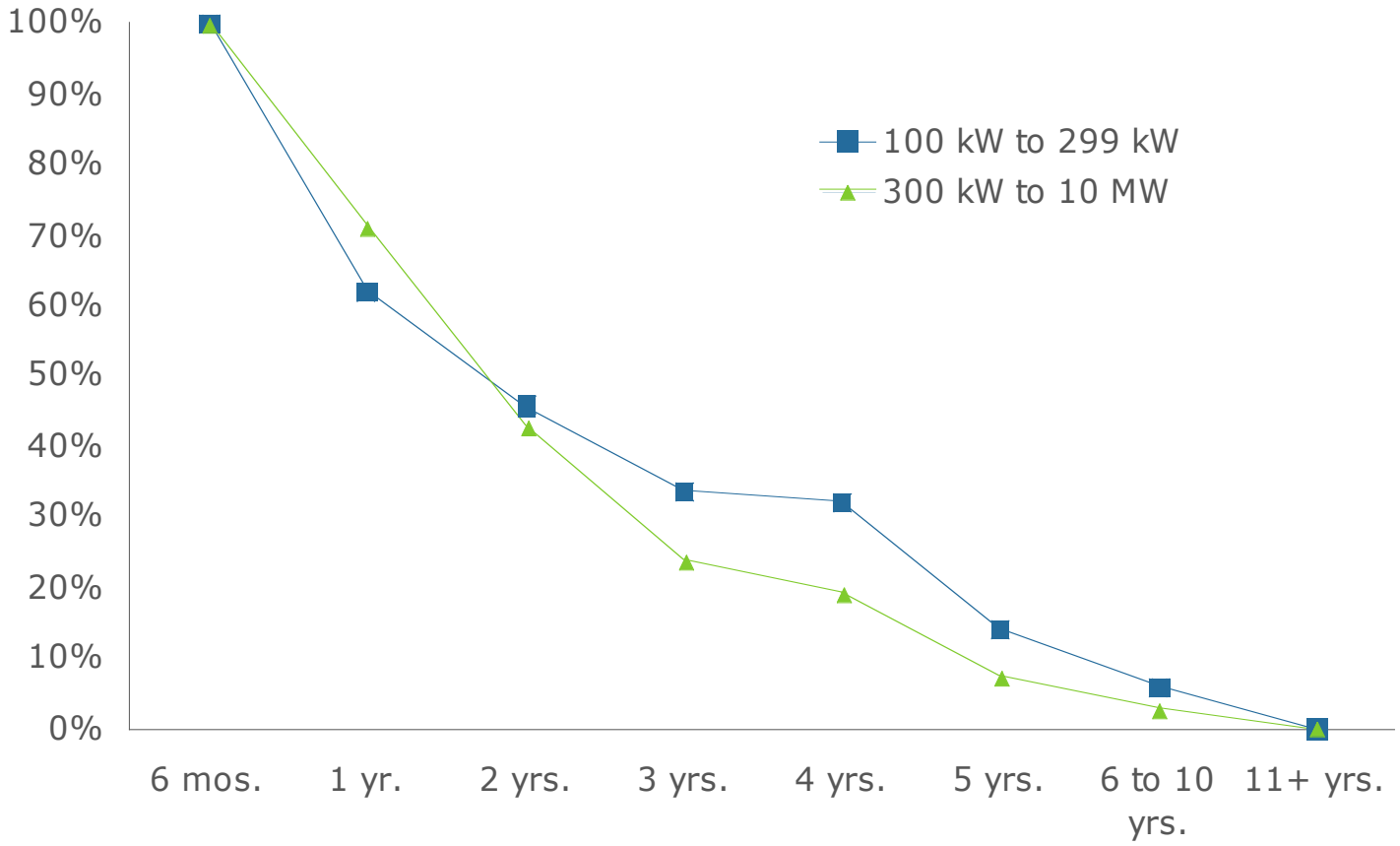
Source: *Primen's 2003 Distributed Energy Market Survey*

Differences in payback acceptance by business type



Source: *Primen's 2003 Distributed Energy Market Survey*

Little difference in payback acceptance by facility size



Source: *Primen's 2003 Distributed Energy Market Survey*

It takes more than savings to close CHP deals

Cost savings and enhanced reliability are the fundamental needs driving energy users to CHP, but to really sell CHP to a user, other criteria need to be addressed, including

- The company's financial position and/or the state of the economy
- Availability of financing from the vendor/project developer
- Specific warranties or guarantees provided
- Service agreement included/offered
- Support for addressing environmental or permitting issues
- Electric service provider's flexibility, or lack thereof, in resolving tariff and interconnection issues

California's users cite economic and non-economic barriers to CHP adoption

Not cost effective

- Capital costs, natural gas prices, interconnection fees

Low priority from upper management

- Despite "crisis" of 2000-2001

Not core business for energy users

- Why take on the risk of being an energy producer?

Uncertainty in the marketplace

- Where are prices heading? How will policies change?

What users say about policy initiatives

We asked respondents for feedback on a variety of policy initiatives that could be enacted.

Forced to select one option, respondents preferred policies that improved the overall economics of the CHP project.

- Increasing the SGIP to include projects of up to 20 MW, as well as increase the incentive from the current 1 MW cap (#1)
- Net metering

Most respondents did **not** see much value in the initiatives that assisted in the project planning phase.

Increasing SGIP incentive from 1 MW cap

"Any sort of increase would be a positive factor. Moving it from 1MW to 4MW for a college district would be really great. I think most colleges could do really well with a baseload of 4 MW."

– community college district,
a 1 MW non-adopter in Southern CA

"Any financial incentive like that would have helped if I could have brought it into the project. For me, it would be nice if it were increased to 6 MW because that is the size of my project. But in general, I would think increasing it to 10 MW would be good for encouraging future projects."

– county hospital,
a 6 MW non-adopter in Northern CA

Net metering

"It is something we discussed when we originally did the project, but because of the complexities and bureaucracy involved we decided not to go down that path. I guess if the red tape could be cleaned up. It would certainly be something that we'd be interested in."

– printing company, a 4.2 MW non-adopter in Northern CA

"I would LOVE net metering. That would be a huge factor."

– community college district, a 1 MW non-adopter in Southern CA

Other initiatives to improve CHP economics supported by users

Respondents were also positive about the following policies that improve the overall economics of CHP

- Credit on monthly bill that equals the wholesale price of power produced onsite
- Elimination of interconnection fees
- Purchase natural gas on a forward price basis
- Purchase natural gas at a lower rate than they currently can
- Elimination of exit fees
- A state tax credit for CHP owners

But be careful of excessive complexity

Initiatives not favored by users

Most respondents did **not** see much value in the initiatives that assisted in the project planning phase.

- Finding a vendor was not an issue for respondents
  - However they did support the a vendor list from the utility or a CEC certification list
- Obtaining financing was not a problem for most respondents
  - For those that had a problem, CA state financing or low cost financing would have been helpful
- Permitting **was** a problem for a few respondents
  - A faster permitting process would be helpful, but it would not have made a difference in the project going forward or not

Implications for the California market

CHP sales not easy, and CA policymakers face challenges to increased CHP capacity in the state

- Less than half of energy users say a 2-year payback is acceptable
- Beyond paybacks, other issues can easily derail CHP project development pathway
- Market and policy gyrations of past 10 years have led to less CHP than anticipated and higher risk perception

Users who have lowest economic threshold are government/education segments

- Private sector less willing to accept longer paybacks

Enacting key policies that can "tip" a prospects to become a customer is crucial

- Our in-depth interviews found that policies that improve overall economics of CHP project most desired

Panel of end users & representatives

Richard Brent, Solar Turbines, Inc.

David Dyck, Valero Refining Company

Ed Yates, California League of Food Processors

Ralph Renne, Exar Corporation

Michael Alcantar, Cogeneration Association of California/Energy Producers and Users Coalition